933 1

GENERAL ORDER NO. 96B-99787C WORK RELEASE AUTHORIZATION NO.: Y-03

DRAFT FINAL
REMEDIAL INVESTIGATION REPORT
INSTALLATION RESTORATION PROGRAM SITES

FOR
NORTON AIR FORCE BASE
SAN BERNARDINO, CALIFORNIA

Volume 2 - Text

Prepared for
MARTIN MARIETTA ENERGY SYSTEMS, INC.
HAZWRAP
OAK RIDGE, TENNESSEE 37831
and
UNITED STATES AIR FORCE HEADQUARTERS
AIR FORCE BASE DISPOSAL AGENCY
NORTON AIR FORCE BASE
CALIFORNIA 92409

Prepared by

CDM FEDERAL PROGRAMS CORPORATION 301 HOWARD STREET, SUITE 910 SAN FRANCISCO, CALIFORNIA 94105

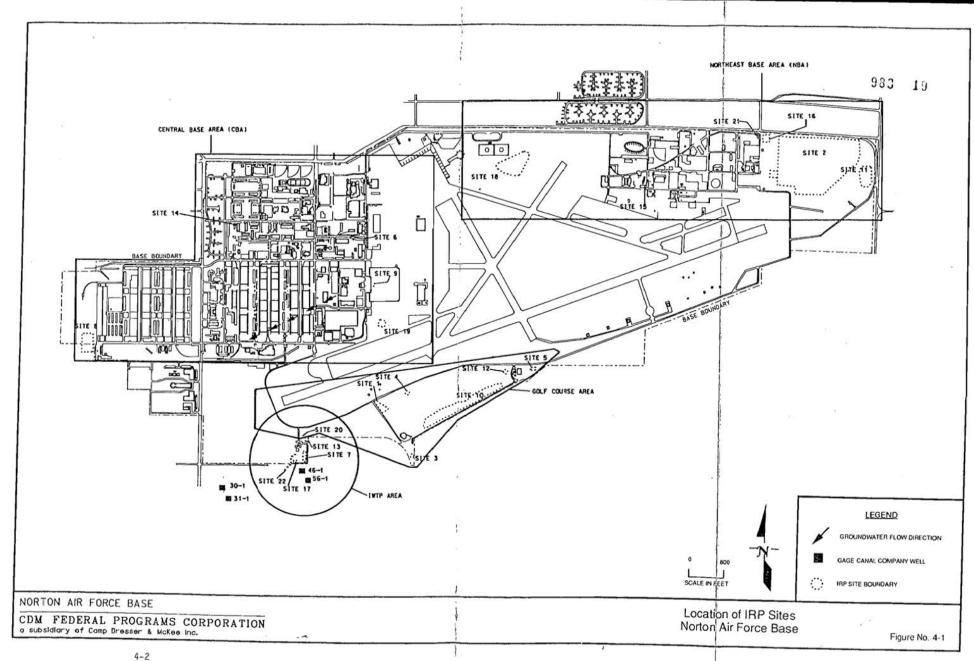
> November 4, 1992 Revision 0

DOCUMENT CONTROL NO. 7900-003-FR-CCWM

Since 1982 Norton AFB has been the subject of a series of environmental investigations related to hazardous materials handling, storage, and disposal. Investigations have been conducted to evaluate potential soil and groundwater contamination. Between 1982 and 1989, investigations consisted of evaluating potential and known contamination at 22 IRP sites located throughout Norton AFB. From 1989 to the present, Norton AFB has been conducting a remedial investigation to further characterize IRP sites and address basewide groundwater contamination. Two IRP sites were not investigated as part of the work reported in this document. These are sites 8 and 20. IRP site 8 was fully characterized by the previous investigators (1982-1985); the characterization of site 20 is being conducted and reported separately from this investigation. This section presents the analytical results from previous IRP field investigations and from the recent remedial investigation (RI).

The 22 IRP sites are located in one of three geographical areas across Norton AFB. These geographical areas are described in Sect. 1.0 and include the Central Base Area (CBA), the Industrial Waste Treatment Plant (IWTP) and Golf Course Area (GCA), and the Northeast Base Area (NBA). Of the 22 IRP sites, sites 6, 8, 9, 14, and 19 are located in the CBA; sites 7, 13, 17, and 22 at the IWTP with site 20 possibly existing on the golf course immediately outside of the IWTP; sites 1, 3, 4, 5, 10, and 12 in the GCA; and sites 2, 11, 15, 16, 18, and 21 in the NBA (Fig. 4-1).

As stated, one of the objectives of the RI/FS is to define the nature and extent of contamination at the IRP sites and to define the nature and extent of groundwater contamination basewide. The



- Shacklette, H.T., and Boerngen, J.G., 1984. <u>Element</u>

 <u>Concentration in Soils and Other Surficial Materials of the Conterminous United States.</u>, U.S. Geological Survey

 Professional Paper 1270, Alexandria, VA.
- Tchobanoglous, G., and Schroeder, E.D., 1985. <u>Water Quality:</u>
 <u>Characteristics-Modeling-Modification</u>, Addison-Wesley
 Publishing Company, Menlo Park, CA., p. 768.
- TetraTech, 1992. Summary of Results of Basewide Underground Storage Tank Survey, Norton AFB.
- The Earth Technology Corporation, 1991. Norton Asbestos Register.
- _____1992. Draft Pump and Treat Treatability Study
- Todd, David Keith, 1980. Groundwater Hydrology, John Wilen & Sons, 535 p.
- U. S. Department of Agriculture, Soil Conservation
 Service, in Cooperation with University of California
 Agricultural Experiment Station, 1980. Soil Survey of San
 Bernardino County, Southwestern Part. U.S. Government
 Printing Office.
- U.S. Department of the Air Force, 1992. <u>Draft Final</u>
 <u>Environmental Impact Statement</u>. <u>Disposal and Reuse of</u>
 Norton AFB, California.
- U.S. Department of Commerce, 1968. <u>Climatic Atlas of the United States</u>, Reprinted by the National Oceanic and Atmospheric Administration (1983).
- U.S. Department of Energy 1989. <u>Quality Control for Field</u> <u>Methods</u> (DOE/HWP-69. HAZ-RAP-102-2).
- 1988. Requirements for Quality Control of Analytical Data (DOE/HWP-65, HAZ-RAP-102-1). The format of the QAPPs followed that suggested by EPA Region IX (Document No. 9QA-03-89).